

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) PAPER TRIMMER

(71) We, CHARLES JOHN WEBB, a British Subject, of 95 Earlswood Road, Redhill, Surrey, and ROTASPRAY PRODUCTS LIMITED, a British Company, of 95 Earlswood Road, Redhill, Surrey, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statements:—

The present invention relates to a paper trimmer of the kind in which the cutting or trimming of the paper is effected by a straight edge of a

prise a resilient wheel the resilient material of which may consist of rubber or of a resilient plastic material. The disc or wheel may provide an axial boss and the rotatable pressure member may be mounted on the boss fast with the boss, and with the boss preferably directed so that the rotatable pressure member acts on the surface of the paper being cut or on any pressure strip employed to lie on the paper being cut.

The rotatable pressure member may, however, be mounted freely on its mounting and in this case it may be used to drive the disc or wheel by the provision of a drive between the rotatable

PATENTS ACT 1949

SPECIFICATION NO. 1,210,919

Reference has been directed, in pursuance of Section 9, subsection (1) of the Patents Act, 1949, to Specification No. 899,348.

THE PATENT OFFICE
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along by hand, but it can be operated mechanically.

According to the present invention there is provided a paper trimmer of the kind defined wherein the drive for rotation of the cutting member constituted by the wheel or disc, is obtained by means of frictional contact between a rotatable pressure member (not being the wheel or disc) and an underlying surface such as the paper being cut or any pressure strip surmounting the paper to be cut; and wherein the mounting of the wheel or disc is carried on a single rail positioned to lie parallel to the straight edge, or on a plurality of rails positioned to lie parallel to one another and to the straight edge, and in a plane inclined to the plane of the sharp edge of the wheel or disc.

Preferably, the rotatable pressure member and/or its mounting is such as to provide a resiliency to enable different thicknesses of paper to be cut.

The rotatable pressure member may comprise a resilient wheel the resilient material of which may consist of rubber or of a resilient plastic material. The disc or wheel may provide an axial boss and the rotatable pressure member may be mounted on the boss fast with the boss, and with the boss preferably directed so that the rotatable pressure member acts on the surface of the paper being cut or on any pressure strip employed to lie on the paper being cut.

The disc or wheel mounting is preferably carried on the rail or rails to enable the mounting to be slid by hand to and fro thereon with the wheel or disc acting against the straight edge. A feature of the invention is the use, in the embodiment in which the rotatable pressure member is used to act on the surface of the paper being cut or on a pressure strip, of a single rail with the rail positioned in relation to the straight edge so as to prevent any lateral pivoting movement of the disc or wheel mounting about the rail. This leads to a safe use of the trimmer since it prevents any sudden lateral pivoting of the sharp-edged wheel or disc under the force applied thereon during operation. Further, it has been found that when the single rail is so

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The present invention relates to a paper trimmer of the kind in which the cutting or trimming of the paper is effected by movement along a rigid straight edge, of a cutting member constituted by a sharp-edged, rotating disc or wheel so that the sharp edge of the disc or wheel acts against a face of the straight edge parallel with the disc or wheel. Hereinafter, a paper trimmer of this kind will be referred to as a paper trimmer of the kind defined. Usually the translational movement of the wheel or disc along the straight edge will be effected manually e.g. by mounting the wheel or disc so that the mounting can be pushed along by hand, but it could be effected mechanically.

According to the present invention there is provided a paper trimmer of the kind defined wherein the drive for rotation of the cutting member constituted by the wheel or disc, is obtained by means of frictional contact between a rotatable pressure member (not being the wheel or disc) and an underlying surface such as the paper being cut or any pressure strip surmounting the paper to be cut; and wherein the mounting of the wheel or disc is carried on a single rail positioned to lie parallel to the straight edge, or on a plurality of rails positioned to lie parallel to one another and to the straight edge, and in a plane inclined to the plane of the sharp edge of the wheel or disc.

Preferably, the rotatable pressure member and/or its mounting is such as to provide a resiliency to enable different thicknesses of paper to be cut.

The rotatable pressure member may comprise a resilient wheel the resilient material of which may consist of rubber or of a resilient plastic material. The disc or wheel may provide an axial boss and the rotatable pressure member may be mounted on the boss fast with the boss, and with the boss preferably directed so that the rotatable pressure member acts on the surface of the paper being cut or on any pressure strip employed to lie on the paper being cut.

The rotatable pressure member may, however, be mounted freely on its mounting and in this case it may be used to drive the disc or wheel by the provision of an intermediate drive between the rotatable pressure member and the wheel or disc, e.g. a belt or spring wire drive or a friction drive.

In the case where the rotatable pressure member is mounted on the boss of the wheel or disc to act on the paper being cut or on any pressure strip employed, it will be understood that the rotatable pressure member is of a smaller diameter than the wheel or disc since the latter acts against a face of the straight edge parallel to the plane of the wheel or disc while the rotatable pressure member acts against a surface normal to that plane. Consequently in this case, the resilient wheel provides a geared drive to the wheel or disc.

The disc or wheel mounting is preferably carried on the rail or rails to enable the mounting to be slid by hand to and fro thereon with the wheel or disc acting against the straight edge. A feature of the invention is the use, in the embodiment in which the rotatable pressure member is used to act on the surface of the paper being cut or on a pressure strip, of a single rail with the rail positioned in relation to the straight edge so as to prevent any lateral pivoting movement of the disc or wheel mounting about the rail. This leads to a safe use of the trimmer since it prevents any sudden lateral pivoting of the sharp-edged wheel or disc under the force applied thereon during operation. Further, it has been found that when the single rail is so

positioned, it undergoes little deflection under the force imposed thereon during operation, and that if the rail is positioned in or near to the plane of the face of the straight edge against which the disc or wheel acts, not only is lateral pivoting prevented but there is a minimum deflection of the rail. It has also been found that an enhanced rigidity is provided by the plurality of rails because of their arrangement in a plane inclined to the plane of the sharp edge of the wheel or disc. Preferably, the inclined plane lies at an angle of substantially 45° to the plane of the sharp edge of the wheel or disc.

The wheel or disc is preferably mounted in a housing so that the sharp edge, except for the portion acting against said face of the straight edge, is covered; and the rotatable pressure member may be carried within or on the housing.

A pressure strip may be used, and it is preferred to employ one having slots running normal to the straight edge to enable the portion of the strip between the slots to be deflected down on to the paper being cut.

The trimmer will usually provide a board of which the straight edge is a part, on which to lay paper sheets to be cut; and the board may be equipped with a movable arm mounted to lie parallel to the straight edge to act as a stop so that sheets of different sizes can be held in position on the board to prevent movement of the sheet being cut, away from the straight edge. The arm may be mounted on a rail e.g. of wood, disposed along an edge of the board running normal to the line of the straight edge and the arm may have a locking mechanism to lock it in any position it occupies on the rail. The lock may comprise a cam turned by a handle or knob so that when the cam is turned one way the eccentric of the cam wedges against the rail to lock the arm in position and when turned the other way leaves a clearance from the rail to enable the arm freely to slide thereon. The arm may be articulated so that the part thereof extending over the board from the rail may be pivoted to assume an angle inclined to the straight edge and the part mounted on the rail may have an edge facing the first mentioned part graduated with a scale in degrees so that the angle assumed by the first-mentioned part may be read off the scale.

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:—

Fig. 1 is a plan view of a trimmer according to the invention employing two rails for the purpose of carrying the disc mounting;

Fig. 2 shows a transverse section of the cutting disc mechanism of the device of Figure 1;

Fig. 3 shows a transverse section of a cutting wheel mechanism using a single rail, which may alternatively be employed in the trimmer of Fig. 1;

Fig. 4 shows in an elevational section a backstop which may be employed on the trimmer of Fig. 1; and

Fig. 5 shows an articulated backstop which may be employed as an alternative to the backstop shown in Fig. 4.

Referring to Fig. 1 of the drawings, it may be seen that the trimmer comprises a board 1 on which paper sheets to be trimmed may be laid, having a rigid metal bar 2 set against one upstanding side of the board to form a rigid straight edge. The bar 2 is overlaid by a transparent, flexible pressure strip 3 which is slotted as shown at 3' and 3'' so that the portion between the slots may be pressed down on to a paper sheet positioned for trimming at the straight edge. The board at each end of the side bearing the straight edge, carries a standard 4, 4'' in which are mounted two rails 5 so that as shown in Figure 2, the rails lie parallel to one another and to the straight edge, and in plane inclined, preferably at 45°, to the plane of the exposed, upstanding face 2' of the straight edge. The rails carry the disc cutting mechanism which comprises a housing 7 providing a front wall 8, rear wall 9 and lateral walls one of which 10 is seen in Figure 2. The lateral walls are apertured to receive the rails therethrough so that the housing slides on the rails. The housing provides two depending flanges 11, 12 apertured respectively to receive flanged bearing sleeves 13, 14 positioned in the bores with their terminal peripheral flanges 15, 16 facing each other. The bearing sleeves receive a shaft 17 of a cutting disc 18, and the shaft carries a coil spring 19 to force the two sleeves 13, 14 apart and in so doing force the disc against the face 2' of the straight edge 2 so that the frictional contact between the cutting disc and the face 2' alone would be sufficient to cause rotation of the disc on sliding motion of the housing 7. The disc 18 bears a boss (not shown) to overlie the board and the boss has mounted fast thereto a resilient wheel 20 so that when manual pressure is applied to the housing 7 to cause the sliding movement, the wheel 20 bears firmly down on the pressure strip 3 and is rotated by the frictional contact between the wheel and the pressure strip. It will be observed that since the disc 18 bears against the face 2' of the straight edge, the resilient wheel 20 must be of a lesser diameter than the disc. Consequently, the resilient wheel acts

as a gear to cause a faster rotation of the disc 18 than would be achieved otherwise, and as a result, the frictional contact between the disc and the straight edge does not assist in rotating the disc.

In the alternative embodiment shown in Figure 3, the general arrangement is similar but the housing 21 slides on only one rail 22 and carries a shaft 23 mounted in apertures in the rear wall 24 and the front wall 25 respectively of the housing. The shaft 23 has mounted thereon a sleeve 26 on which cutting wheel 27 freely rotates, and a resilient wheel 28 carried fast on a boss 29 of the wheel 27 so that the latter and the wheel 28 rotate together. The sleeve 26 has a terminal, peripheral flange 30 which faces a further sleeve 31 on which is mounted a coil spring 32 to force sleeve 26 against the cutting wheel 27 and, consequently, the cutting wheel 27 against the face 2' of the straight edge 2 so that the frictional contact between the facing surfaces of the cutting wheel 27 and straight edge, alone would be sufficient to cause rotation of the cutting wheel 27 on sliding motion of the housing on the rail if the disc were not driven by the resilient wheel 28. The resilient wheel is positioned to bear firmly down on the pressure strip 3 and thus act not only as a pressure member but also as a geared drive of the cutting wheel 27 in a like manner to the resilient wheel 20 described above.

The backstop of Figure 4 is shown mounted on the trimmer in Figure 1, and consists of an arm 33 rigidly secured to a mounting 34 which is set up on the slides along a rail 35 (Fig. 1) secured to the board 1. The mounting provides a locking mechanism comprising a cam 36 carried on a shaft 37 passing through an aperture in the mounting to receive on the side thereof opposite to the cam, an operating knob 38 held in place by a grub screw 39 passing through a bore in the knob and received in a screw threaded bore in the shaft 37. When the cam is turned one way, the eccentric portion 40 thereof is brought into contact with an upstanding side 41 of the rail 35 to provide a wedging action which holds the mounting in position but otherwise the cam leaves a clearance as shown in Figure 4 between itself and the rail 35 to allow of free sliding movement of the mounting on the rail 35.

In the alternative backstop shown in Figure 5, like mounting 42 is employed but the arm 43 is pivoted thereto so that the arm may be swung around the pivot to assume an angle inclined to the straight edge. The end portion 44 of the mounting is graduated with a scale in degrees as shown in Figure 5 so that the angle assumed by the arm may be read-off from the scale.

In operation of the above described trimmers, the cutting disc or wheel is first positioned at the right hand end of the rails as seen in Figure 1, and a sheet of paper placed on the board with one edge lying against the rail carrying the backstop mounting and the trailing edge positioned against the arm of the backstop and with the portion to be cut-off overhanging the straight edge. It is assumed that the sheet is of a size to leave a clearance at said right hand end of the straight edge for the cutting disc or wheel. The housing of the cutting mechanism is then pushed along by the hand to move the disc or wheel on to the sheet and the movement continued until the cutting disc or wheel passes beyond the opposite edge of the sheet, thus severing the overhanging portion.

Because the cutting disc or wheel is entirely covered from above, the hand of the user cannot come into contact therewith in operating the trimmer; and because lateral pivoting movement of the housing is prevented, it is not possible accidentally to up-end the housing during operation and thus expose the cutting disc or wheel. In the first described embodiment, the lateral pivoting movement is prevented by the two rails and in the alternative single rail embodiment, by the positioning of the single rail in relation to the straight edge and by the fact that the cutting wheel acts against the upstanding face of the straight edge, and the resilient wheel against the face normal to the upstanding face of the pressure strip. Both embodiments, therefore, provide the maximum degree of safety in use. Further, in the single rail embodiment, the position of the rail near the plane of the upstanding face of the straight edge avoids deflection of the rail sufficiently to make a single rail entirely practicable without having to use an unduly thick rail.

WHAT WE CLAIM IS:—

1. A paper trimmer of the kind defined wherein the drive for rotation of the cutting member constituted by the disc or wheel is obtained by means of frictional contact between a rotatable pressure member (not being the wheel or disc) and an underlying surface; and wherein the mounting of the cutting member is carried on a single rail positioned parallel to the straight edge, or on a plurality of rails positioned to lie parallel to each other and to the straight edge, and in a plane inclined to the plane of the sharp edge of the cutting member.

2. A paper trimmer according to claim 1, wherein the rotatable pressure member and/or its mounting is such as to provide a resiliency.

3. A paper trimmer according to claim

- 2, wherein rotatable pressure member comprises a resilient wheel.
4. A paper trimmer according to claim 3, wherein the resilient material of the wheel consists of rubber or a resilient plastics materials.
5. A paper trimmer according to any of the preceding claims 2 to 4, wherein said cutting member provides an axial boss and the rotatable pressure member is mounted thereon.
6. A paper trimmer according to claim 5, wherein the boss is directed so that the rotatable pressure member acts on the surface of the paper being cut or on any pressure strip employed to lie on the paper being cut.
7. A paper trimmer according to any of the preceding claims, wherein the mounting of said cutting member is carried on the rail or rails, to enable the mounting to be slid to and fro manually thereon with the disc or wheel acting against the straight edge.
8. A paper trimmer according to claim 2 or 2 and any of preceding claims 3 to 7 wherein the single rail is positioned in relation to the straight edge, and the pressure member is mounted, so as to prevent any lateral pivoting of the mounting of said cutting member about the single rail.
9. A paper trimmer according to any of the preceding claims 1 to 7 wherein the mounting of said cutting member is carried on two rails.
10. A paper trimmer according to claim 9 wherein the two rails lie in a plane inclined at substantially 45° to the plane of the sharp edge of said cutting member.
11. A paper trimmer according to any of the preceding claims, wherein the mounting of said cutting member is carried in a housing so that the cutting member is covered from above.
12. A paper trimmer according to any of the preceding claims, wherein any pressure strip employed bears parallel slots running normal to the straight edge to allow of deflection of the portion of the strip between the slots, on to the paper being cut.
13. A paper trimmer according to any of the preceding claims, wherein a backstop is provided which can be adjusted in position in relation to the straight edge.
14. A paper trimmer according to claim 13, wherein the backstop provides an articulated arm which can be moved to lie at an angle inclined to the straight edge.
15. A paper trimmer, according to claim 13 or claim 14, wherein a locking mechanism is provided so that the backstop can be locked in position.
16. A paper trimmer substantially as hereinbefore described with reference to Figures 1 and 2 or 3.
17. A paper trimmer substantially as hereinbefore described with reference to Figures 1 and 2 or 3, and to Figure 4 or Figure 5.

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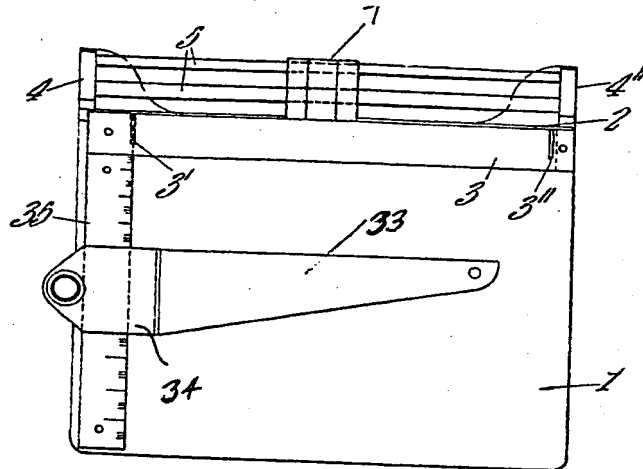


Fig. 1.

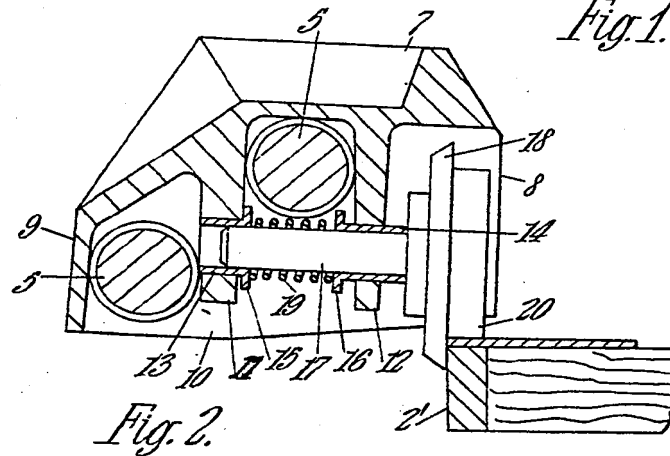


Fig. 2.

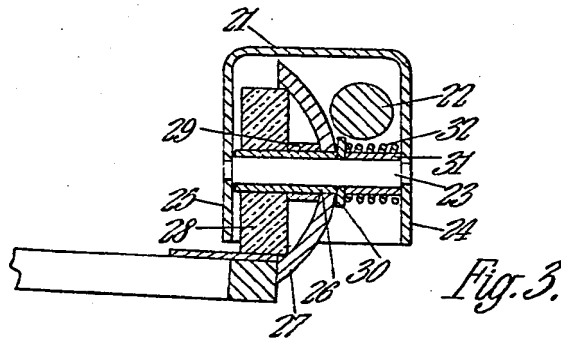
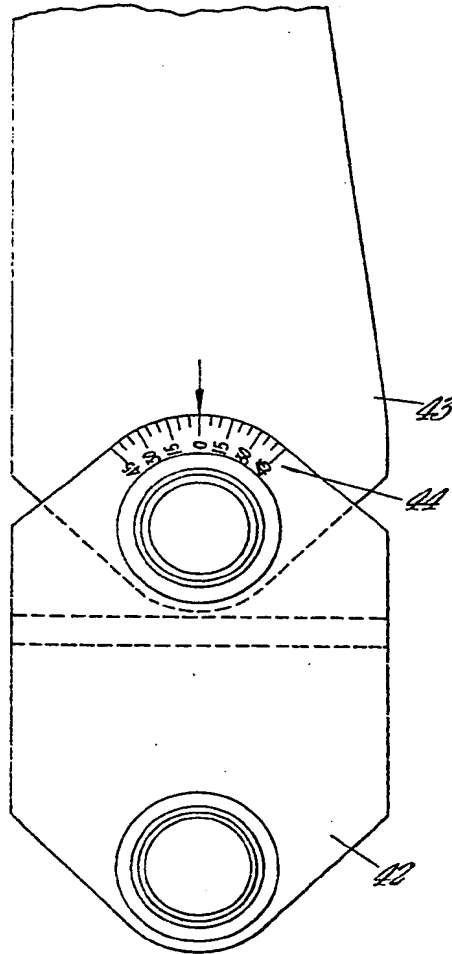
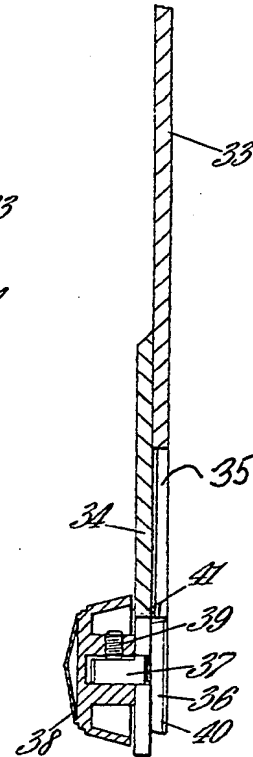


Fig. 3.

*Fig. 5.**Fig. 4.*

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